**Introduction:**

In animal cells, the movement of water into and out of the cell is influenced by the relative concentration of solute on either side of the cell membrane. This movement allows the cell to maintain **homeostasis**, or a constant internal environment. If water moves out of the cell, the cell will shrink. If water moves into the cell, the cell may swell or even burst. In plant cells, the presence of a cell wall prevents the cells from bursting, but pressure does eventually build up inside the cell and affects the process of osmosis. When the pressure inside the cell becomes large enough, no additional water will accumulate in the cell even. So movement of water through the plant tissue cannot be predicted simply through knowing the relative solute concentrations on either side of the plant cell wall. In this lab you will determine the molarity of sugar in the potato and if an unknown concentration of sucrose. The solutions will be hypotonic, hypertonic, or isotonic to the potato

To test what will happen when a cell is place in different environments we will place a dialysis bag in different concentrations of sugar. The dialysis bag is semipermeable just like your cells, so it will represent the cell. The solution in the beaker will have a different concentrations of sugar and will represent the external environment.

On your own paper write up the lab. Include all sections (except the introduction) in order.

**Scientific Question**: What happens when a cell is in a different environment?

**Hypothesis**: If \_\_\_\_\_\_\_\_\_\_\_\_\_, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Materials:**

* Water
* Sugar
* Dialyses bags
* Graduated cylinder
* Scale
* Petri dish
* Stirring rod
* Beakers

**Procedure:**

1. Go to the website <http://bit.ly/2k6Jbqd> and click start.
2. Click continue after reading the introduction
3. Follow the steps on the simulation.
4. You do not have to sketch the beakers, but record data on you data sheet.
5. Calculate the change in mass. Some bags may have loss mass so the number will be negative, don’t forget to include the negative sign.

**Data:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Beaker** | **Grams of Sugar** | **Concentration** | **Initial Mass (g)** | **Final Mass (g)** | **Change in Mass (g)** |
| A (control) |  |  |  |  |  |
| B |  |  |  |  |  |
| C |  |  |  |  |  |
| D |  |  |  |  |  |
| E |  |  |  |  |  |

**Data Analysis:**

1. Graph the change in mass. Be sure to include a title and all labels.
2. Why did we use water inside and outside the cell for the control group?
3. Which beakers did not change mass? Why did they not change? Think out the toxicity of the solution.

**Conclusion**:

Write a CER conclusion to answer the question: What happens when a cell is in a different environment?

Use actual data for evidence and explain how the evidence supports your claim. Be sure to include vocabulary to describe the solutions (isotonic, hypertonic, hypotonic).